SEQUENCE LISTING

<110> University of Maryland Biotechnology Institute
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<120> VACCINES AGAINST HIV-1 PROTEIN TO GENERATE NEUTRALIZING ANTIBODIES

<130> 4115-194

<140> Not yet assigned
<141> 2005-06-16

<150> US 60/434,368
<151> 2002-12-18

<160> 51

<170> PatentIn version 3.3

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<212> PRT
<213> Human immunodeficiency virus type 1

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<222> (21)..(21)
<223> X may be any amino acid, preferably A or P

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Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser
1 5 10 15

Gln Pro Lys Thr Xaa
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Gln Pro Lys Thr Xaa
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Gln Pro Lys Thr Xaa
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Gln Pro Lys Thr Ala
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Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser

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Gln Pro Lys Thr Pro
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nnn 63

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nnn 63

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gct 63

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ccc 63

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Ser Tyr Gly Ser Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln
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Ser Tyr Gly Ser Lys Lys Arg Arg Gln Arg Arg Arg
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Lys Ala Leu Gly Ile Ser Tyr Gly Ser Lys Lys Arg Arg Gln Arg Arg
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Met Glu Pro Val Asp Pro Arg Leu Glu Pro Trp Lys His Pro Gly Ser
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Gln Pro Lys Thr
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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
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Gln Pro Arg Thr
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Gln Pro Arg Thr
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Gln Pro Lys Thr
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Gln Pro Lys Thr
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Asp Pro Gly Thr Val Glu Pro Lys Pro Leu His Pro Glu Arg Lys Gln
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Met Pro Trp Ser
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Ser Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys
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Phe His Cys Gln
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Phe His Cys Gln
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Ser Gln Pro Arg Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys
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Phe His Cys Tyr
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Ser Gln Pro Lys Thr Ala Cys Asn Lys Cys Tyr Cys Lys Asn Cys Ser
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Tyr His Cys Leu
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<400> 26

Ser Gln Pro Lys Thr Ala Cys Asn Thr Cys Tyr Cys Lys Lys Cys Cys
1 5 10 15

Tyr His Cys Gln
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<212> PRT
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Thr Cys Cys Gln Lys Asn Lys Cys Pro Thr Lys His Gln Cys Cys Phe
1 5 10 15

Ser Ala Tyr Cys
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<400> 28

Cys Phe His Cys Gln Val Cys Phe Met Thr Lys Ala Leu Gly Ile Ser
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Tyr Gly Arg Lys
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<400> 29

Cys Phe His Cys Gln Val Cys Phe Ile Thr Lys Gly Leu Gly Ile Ser

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Tyr Gly Ser Lys
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<400> 30

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Tyr Gly Arg Lys
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<400> 31

Ser Tyr His Cys Leu Val Cys Phe Gln Thr Lys Gly Leu Gly Ile Ser
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Tyr Gly Arg Lys
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Cys Tyr His Cys Gln Val Cys Phe Leu Asn Lys Gly Leu Gly Ile Ser
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Tyr Gly Arg Lys
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<400> 33

Gln Thr Ile Lys Cys Met Gly Arg Phe His Leu Phe Gly Cys Ala Tyr
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Cys Val Lys Ser
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<400> 34

Ser Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala His Gln Asn
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Ser Gln Thr His
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<400> 35

Ser Tyr Gly Ser Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln Asp
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Asn Gln Thr His
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Ser Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Ala Pro Gln Asp
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Ser Gln Thr His
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Ser Glu Asp His
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Asn Gly Asp His
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Gln Lys Arg His Arg Gln His Thr Gly Arg Ala Gln Tyr Arg Ser Arg
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Ser Lys Arg Asn
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<400> 40

Asn Ser Gln Thr His Gln Ala Ser Leu Ser Lys Gln Pro Thr Ser Gln
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Ser Arg Gly Asp
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Cys Asn Gln Thr His Gln Val Ser Leu Ser Lys Gln Pro Ser Ser Gln
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Pro Arg Gly Asp
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Asp Ser Gln Thr His Gln Ala Ser Leu Ser Lys Gln Pro Ala Ser Gln
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Ser Arg Gly Asp
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Ser Ser Glu Asp His Gln Asn Leu Ile Pro Lys Gln Pro Leu Pro Arg
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Thr Gln Gly Asp

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Ser Asn Gly Asp His Gln Asn Pro Ile Ser Lys Gln Pro Leu Pro Gln
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Thr Arg Gly Asp
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His Ser Ser Asp Thr Leu Thr Gly Gln Ser Pro Arg Ser Ala Gln Ser
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Asn Gln Lys Gln
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Gln Ser Arg Gly Asp Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val
1 5 10 15

Glu Arg Glu Thr
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Gln Pro Arg Gly Asp Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val
1 5 10 15

Glu Arg Glu Thr
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Gln Ser Arg Gly Asp Pro Thr Gly Pro Thr Glu Ser Lys Lys Lys Val
1 5 10 15

Glu Arg Glu Thr
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Arg Thr Gln Gly Asp Pro Thr Gly Ser Glu Glu Ser Lys Lys Lys Val
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Glu Ser Lys Thr
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Gln Thr Arg Gly Asp Pro Thr Gly Ser Lys Glu Ser Lys Lys Glu Val
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Glu Ser Lys Thr
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Lys Asp Lys Thr Gly Glu Lys Pro Arg Lys Gly Arg Ser Thr Ser Glu
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Gln Pro Glu Val
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